



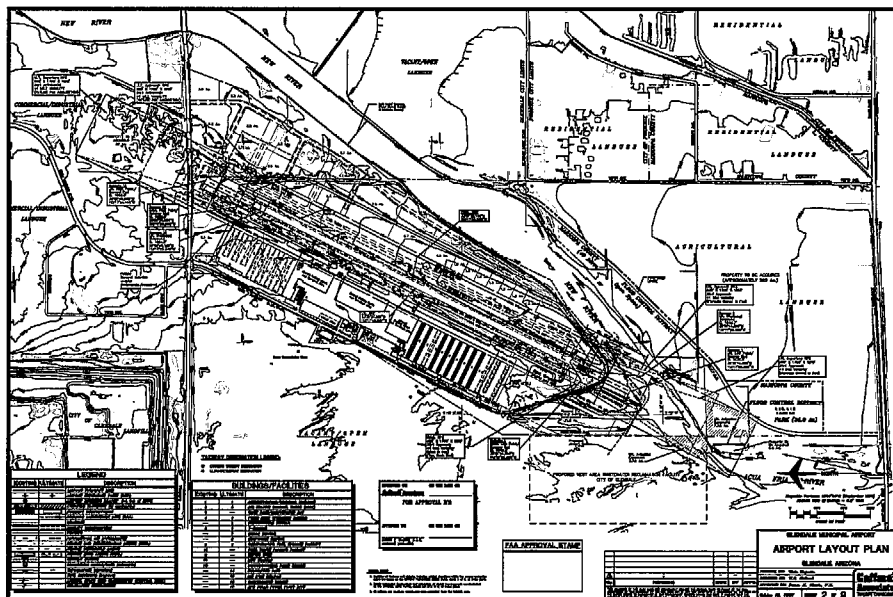
GLEND~~A~~LE

MUNICIPAL AIRPORT

Chapter Five

AIRPORT PLANS

## AIRPORT PLANS



suggestions from PAC members, the development alternatives have now been refined into a single recommended master plan concept. The purpose of this chapter is to describe in narrative and graphic form, the recommended direction for the future use and development of Glendale Municipal Airport.

The airport master planning process has evolved through several analytic efforts in the previous chapters intended to analyze future aviation demand, establish airside and landside facility needs, and evaluate options for the future development of the airside and landside facilities. The planning process, thus far, has included the presentation of two phase reports, representing the first four chapters of the master plan, to the Planning Advisory Committee (PAC), which has provided feedback to the consultant. The recommended master plan concept did not evolve until the PAC and City of Glendale officials had the opportunity to submit detailed comments on the draft phase reports. Having completed the review meetings with these participants, and reviewing

### AIRPORT DESIGN STANDARDS

The design and safety standards pertaining to airport facilities are based primarily upon the characteristics of the critical design aircraft expected to use the airport. The critical design aircraft is the most demanding aircraft or "family" of aircraft which will conduct 500 or more operations (take-offs and landings) per year at the airport. FAA Advisory Circular 150/5300-13, *Airport Design*, is the primary reference for the design of airfield facilities. Within this advisory circular, a coding system has been established that identifies an airport's critical design aircraft. This

design aircraft code, referred to as the Airport Reference Code (ARC), is a function of the critical design aircraft's approach speed and wingspan. The ARC was previously discussed in Chapter Three.

Glendale Municipal Airport is utilized by a variety of general aviation aircraft ranging from small single and multi-engine piston aircraft to business turboprop and turbojet aircraft. Single and multi-engine piston aircraft currently comprise the majority of operations at the airport. Business turboprop and turbojet aircraft operations are currently limited and total less than 500 operations per year. As detailed in Chapter Two - Aviation Demand Forecasts, the airport can expect an increase in the use of business turboprop and turbojet aircraft through the planning period. Therefore, common business turboprop and turbojet aircraft are the future critical design aircraft at Glendale Municipal Airport.

ARC B-II design standards have been applied to airfield design at Glendale Municipal Airport in the past. To safely accommodate the critical design aircraft in the future, future facility planning should conform to the more demanding ARC C-II design standards. ARC C-II planning standards and a comparison to B-II design standards are summarized in **Table 5A**. As the airport transitions to ARC C-II design standards an increase in runway width and Runway Safety Area (RSA), Object Free Area (OFA), and Runway Protection Zone (RPZ) standards should be expected. Taxiway standards remain the same.

## ***RECOMMENDED MASTER PLAN CONCEPT***

The recommended master plan concept includes a 1,000-foot extension to the Runway 1 end and an 800-foot extension to the Runway 19 end to provide adequate takeoff length for the full-range of business jet aircraft expected to use the airport. Presently, business jet aircraft operations at the airport are limited due to insufficient runway length, especially during the warm summer months when high temperatures limit aircraft performance.

Glendale Avenue (to the north) and the New River (to the south) limit the distance the runway can be extended and the ability of the airport to meet the more demanding ARC C-II RSA and OFA safety criterion. Presently, there is not sufficient area off either runway end to meet ARC C-II RSA and OFA criterion. Prior to extending Runway 1 a new gabion (a retaining wall constructed along the river channel to support earthwork and reduce erosion) must be constructed in the New River channel. Plans are in place for a new gabion to be constructed 250 feet east of the Runway 1-19 centerline and extend 1,300 feet from the existing Runway 1 threshold. As planned, this will accommodate the proposed 1,000-foot extension to Runway 1 and provide an additional 300 feet towards meeting RSA and OFA criterion. To fully meet RSA and OFA criterion at the Runway 1 end, the airport must employ "declared distances" standards as set forth by the FAA. Utilizing declared

**TABLE 5A**  
**Airfield Planning and Design Standards**

<b>Airport Reference Code Approach Visibility Minimums</b>	<b>B-II Visual</b>	<b>C-II One-Mile</b>
<b><u>Runway</u></b>		
Width (feet)	75	100
Shoulder Width (feet)	10	10
Blast Pad Length (feet)	95	120
Blast Pad Width (feet)	150	150
Runway Safety Area (RSA)		
Width (feet)	150	400
Length Beyond Runway End (feet)	300	1,000
Object Free Area (OFA)		
Width (feet)	500	800
Length Beyond Runway End (feet)	300	1,000
Runway Centerline to Parallel Taxiway Centerline (feet)	240	300
Runway Centerline to Edge of Aircraft Parking Apron (feet)	250	400
<b><u>Runway Protection Zones (RPZ)</u></b>		
Inner Width (feet)	500	500
Outer Width (feet)	700	1,010
Length (feet)	1,000	1,700
Approach Slope Surface (feet)	20:1	34:1
<b><u>Taxiways</u></b>		
Width (feet)	35	
Shoulder Width (feet)	10	
Safety Area Width (feet)	79	
Object Free Area Width (feet)	131	
Taxiway Centerline to Parallel Taxiway/ Taxilane Centerline (feet)	105	
Taxiway Centerline to Fixed or Moveable Object (feet)	65.5	
Wingtip Clearance (feet)	26	
<b><u>Taxilanes</u></b>		
Taxilane Centerline to Parallel Taxilane Centerline (feet)	97	
Taxilane Centerline to Fixed or Moveable Object (feet)	57.5	
Taxilane Object Free Area (feet)	115	
Wingtip Clearance (feet)	18	
Source: FAA Airport Design Software Version 4.2D		

distances standards, the Runway 1 threshold is displaced 700 feet to provide the full RSA and OFA for landing while the full 1,000-foot extension is available for departures to the north. While providing additional

runway length to meet takeoff requirements, this additional length also has the advantage of allowing aircraft to depart from a point farther south which allows for aircraft to more quickly climb to an altitude which can

reduce the effects of aircraft noise as they depart to the north.

To fully meet RSA and OFA criterion and provide for a perimeter service road at the Runway 19 end, the existing Runway 19 threshold must be displaced 200 feet. To provide additional runway length for departures to the south, the existing Runway 19 threshold can be extended 800 feet north to the limits of the RSA and OFA. Utilizing declared distances standards, the full 800-foot extension would then be available for takeoff, but not for landing.

The recommended master plan concept **does not** include a provision for the development of a parallel runway east of Runway 1-19 as has been included in previous planning efforts. Instead, the area east of Runway 1-19 has been planned for industrial/commercial development to include parcels with airfield access. Through discussions with the PAC and City of Glendale officials, it was evident that the potential to enhance the revenue stream of the airport through additional land rental and the unique economic development opportunities provided by the availability of industrial/commercial development parcels with airfield access provided a higher and better use for airport property than did the development of a parallel runway. Additional considerations included: the overall decline in local operations at the airport in recent years, the number of airports and runways available for training operations in the Phoenix area, the City Council policy which prevents city officials from actively marketing the airport to large flight training

operations, the airspace conflicts with Luke Air Force Base which would require aircraft traffic patterns for each runway to overlap and remain east of the runway over residential areas, the costs to develop and maintain the parallel runway and taxiway system, and the lack of a revenue source to directly fund the development and maintenance of a parallel runway and taxiway system. The airfield capacity and delay analysis conducted for this master plan determined that with the existing single runway configuration, overall aircraft delay would be insignificant and increase only slightly from an estimated 9 seconds per aircraft in 1996 to 27 seconds per aircraft by the end of the planning period.

As shown in **Table 5A**, ARC C-II design standards require a runway width of 100 feet. Presently, Runway 1-19 is 75 feet wide. To safely accommodate Approach Category C aircraft, Runway 1-19 should be widened to 100 feet. In conjunction with the runway widening is the relocation of existing runway lighting, as the existing runway lighting fixtures must be moved to provide for the additional runway width.

The present pavement strength rating of 30,000 pounds single wheel loading and 37,500 pounds dual wheel loading is sufficient for only the smaller corporate aircraft. Runway 1-19 is proposed to be strengthened to 75,000 pounds dual wheel loading to accommodate the loading requirements of a greater number of corporate aircraft on a regular basis.

A review of FAA design standards indicates that Taxiways B and G, which are 25 feet wide, do not meet the requirements for airplane design group (ADG) II aircraft. These taxiways are proposed to be widened to 35 feet to conform with FAA design standards.

As property east of Runway 1-19 is developed and businesses locating there desire airfield access, a parallel taxiway will be required to provide efficient and direct access to the airfield. The reflection of this parallel taxiway 300 feet east of Runway 1-19 on the official Airport Layout Plan ensures that any future development in this area takes into account the location of the parallel taxiway and minimum safety area requirements. Future taxiways serving these parcels should conform with ADG II design standards and have a minimum width of 35 feet. Future facilities should be placed at least 65.5 feet from taxiway centerlines.

Global Positioning System (GPS) approaches are proposed for each end of Runway 1-19 to reduce the amount of time that the airport is inaccessible due to low visibility and cloud ceilings and to enhance the safety of operations during these periods. Future GPS approaches will require nonprecision runway markings and coordination with Luke Air Force Base.

Since the future mix of aircraft will include a greater number of business jet aircraft, the existing precision approach path indicators (PAPI-2) installed to the Runway 1 and 19 ends are proposed to be upgraded to PAPI-4 systems. The PAPI-4 system is designed to provide

better visibility of the lighting aid to pilots in larger business aircraft.

The recommended master plan concept includes the acquisition of approximately 42 acres of land to protect the Runway 19 Runway Protection Zone and to provide additional property at Glendale Avenue and Glen Harbor Boulevard for the future expansion of general aviation facilities.

## ***AIRPORT LAYOUT PLANS***

The remainder of this chapter provides a brief description of the official layout drawings for the airport that will be submitted to the FAA and ADOT for review and approval. These plans, referred to as Airport Layout Plans, have been prepared to graphically depict the ultimate airfield layout, facility development, and imaginary surfaces which protect the airport from hazards. This set of plans includes:

- Airport Layout Plan
- Terminal Area Plans
- Part 77 Airspace Plan
- Runway Protection Zone Plans
- Property Map
- Utilities Map

The airport layout plan set has been prepared on a computer-aided drafting system for future ease of use. The computerized plan set provides detailed information of existing and future facility layout on multiple layers that permits the user to focus in on any section of the airport at a desirable scale. The plan can be used as base

information for design, and can be easily updated in the future to reflect new development and more detail concerning existing conditions as made available through design surveys. The airport layout plan set is submitted to the FAA for approval and must reflect all future development for which federal funding is anticipated. Otherwise, the proposed development will not be eligible for federal funding. Therefore, updating these drawings to reflect changes in existing and ultimate facilities is essential.

## **AIRPORT LAYOUT PLAN**

The Airport Layout Plan (ALP) drawing graphically presents the existing and ultimate airport layout. Detailed airport and runway data are provided to facilitate the interpretation of the master plan recommendations. Both airfield and landside improvements are depicted.

The ALP provides a detailed depiction of the proposed use of land east of Runway 1-19. As shown, the property east of Runway 1-19 is divided into a number of parcels of varying size, each with access to the runway and taxiway system at Glendale Municipal Airport. A system of stub taxiways provides airfield access in addition to the previously mentioned parallel taxiway. High speed exits off Runway 1-19 provide direct access to these parcels and facilitates aircraft exiting the runway. A main entrance roadway connects with Glendale Avenue to provide primary ground access to the area.

## **TERMINAL AREA PLAN**

The Terminal Area Plans provide greater detail concerning landside improvements and at a larger scale than the on the ALP. The Terminal Area Plans include detail concerning general aviation facilities located along the west side of the airport.

Depicted on the plans are the areas available for hangar development at Glendale Municipal Airport. Between 175 and 200 hangar units (depending on the size of hangars) are planned for the area north of the FBO hangar. With federal and state grant assistance, the City of Glendale constructed taxiways and extended utilities into this area in 1997. Private groups will construct hangars in this area. A hangar development area is also available at the south end of the existing shade and T-hangar area. Under development by Temple Air, a charter operator based at the airport, this area is currently planned for 15 3,600 square-foot hangars. The City of Glendale constructed taxiway access and extended utilities to this area in 1997. The City of Glendale also constructed a taxiway south of the terminal building to provide access to three parcels of land for the development of commercial general aviation facilities which will provide various general aviation services such as avionics and aircraft interior repair. The areas south of the Temple Air hangar area and north of the north hangar development area are reserved for future general aviation development.

## **FAR PART 77 AIRSPACE PLAN**

The Part 77 Airspace Plan is a graphic depiction of Federal Aviation Regulations (FAR) Part 77, Objects Affecting Navigable Airspace, regulatory criterion. The Part 77 Airspace Plan can aid local authorities in determining if proposed development could present a hazard to the airport and obstruct the approach path to a runway end.

The Part 77 Airspace Plan assigns three-dimensional imaginary areas to each runway. These imaginary surfaces emanate from the runway centerline and are dimensioned according to the visibility minimums associated with the approach to the runway end and size of aircraft to operate on the runway. The Part 77 imaginary surfaces include the primary surface, approach surface, transitional surface, horizontal surface, and conical surface. Part 77 imaginary surfaces are described in the following paragraphs.

### **Primary Surface**

The primary surface is an imaginary surface longitudinally centered on the runway. The primary surface extends 200 feet beyond each runway end and its width is determined by the type of approach established for that runway end (i.e., visual, non-precision, precision). The elevation of any point on the primary surface is the same as the elevation along the nearest associated point on the runway centerline. Under Part 77 regulations, the primary surface for the future GPS

approaches to Runways 1 and 19 is 500 feet wide.

Situated adjacent to the runway and taxiway system, the primary surface must remain clear of unnecessary objects to allow for the unobstructed passage of aircraft. Within the primary surface, objects are only permitted if they are no taller than two feet above the ground and if they are constructed on frangible (breakaway) fixtures. The only exception to the two-foot height requirement is for objects whose location is fixed by function. A precision approach path indicator (PAPI) system is an example of an object which falls within the category of "fixed by function."

### **Approach Surface**

An approach surface is also established for each runway. The approach surface begins at the same width as the primary surface and extends upward and outward from the primary surface end centered along an extended runway centerline. The upward slope and length of the approach surface is determined by the type of approach (existing and/or planned) to the runway end. The approach surface for the future GPS approaches to Runways 1 and 19 extends 10,000 feet from the end of the primary surface at an upward slope of 34 to 1 to a width of 3,500 feet.

### **Transitional Surface**

Each runway has a transitional surface that begins at the outside edge of the



primary surface at the same elevation as the runway. The transitional surface also connects with the approach surfaces of each runway. The surface rises at a slope seven to one up to a height which is 150 feet above the highest runway elevation. At that point, the transitional surface is replaced by the horizontal surface. The transitional surface defines the location of the building restriction line.

### **Horizontal Surface**

The horizontal surface is established at 150 feet above the highest elevation of the runway surface. Having no slope, the horizontal surface connects the transitional and approach surfaces to the conical surface at a distance of 10,000 feet from the primary surfaces of each runway.

### **Conical Surface**

The conical surface begins at the outer edge of the horizontal surface. The conical surface then continues for an additional 4,000 feet horizontally at a slope of 20 to 1. Therefore, at 4,000 feet from the horizontal surface, the elevation of the conical surface is 350 feet above the highest airport elevation.

## **RUNWAY PROTECTION ZONE PLAN**

The Runway Protection Zone Plan is a scaled drawing of the runway protection

zone (RPZ), runway safety area (RSA), obstacle free zone (OFZ), and object free area (OFA) for each runway end. A plan and profile view of each RPZ is provided to facilitate identification of obstructions that lie within these safety areas. Detailed obstruction and facility data is provided to identify planned improvements and the disposition of obstructions.

## **PROPERTY MAP**

The Property Map provides information on the acquisition and identification of all land tracts acquired by the airport. It denotes which properties were obtained by fee simple title and those that are avigation easements. It also indicates the date of acquisition for each tract and which properties, if any, were obtained with federal funds under federal aid programs. The property map for Glendale Municipal Airport has been updated to include recent property purchases in the proposed Camelback Ranch subdivision south of the airport and 59-acres northeast of the airport as detailed in the F.A.R. Part 150 Noise Compatibility Study.

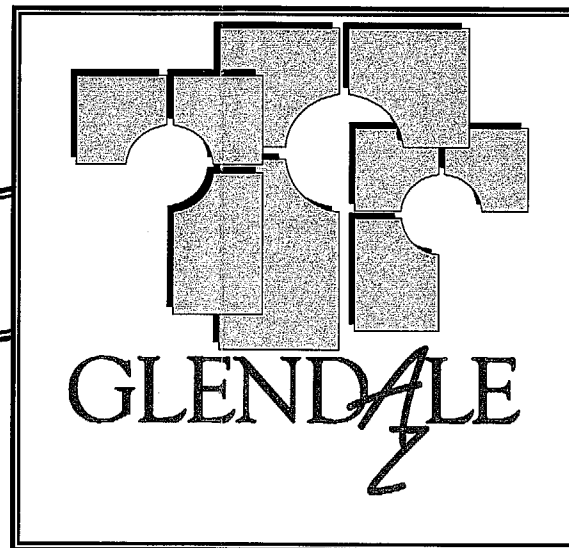
## **UTILITIES MAP**

The utilities map is a scaled drawing depicting the main electrical, sanitary sewer, water, and natural gas service lines at the airport. This drawing includes all developed areas at the airport to include recent improvements for the north and south hangar areas.

## ***SUMMARY***

The airport layout plan set is designed to assist the City of Glendale in making decisions relative to future development and growth at Glendale Municipal Airport. The plan provides for development to satisfy expected airport needs over the next twenty years and well beyond. Flexibility will be a key to future development since activity may not occur exactly as forecast. The plan has considered demands that could be placed upon the airport even beyond the twenty year planning period to ensure

that the facility is capable of accommodating a variety of circumstances. The F.A.R Part 77 Airspace Plan should be used as a tool to ensure land use compatibility and restriction of the heights of future structures or antennae which pose a hazard to air navigation. The ALP set also provides the City of Glendale with options to pursue in marketing the assets of the airport for community development. Following the general recommendations of the plan, the airport can maintain it's long term viability and continue to provide air transportation services to the region.



# AIRPORT MASTER PLAN GLENDALE, ARIZONA

## AIRPORT LAYOUT PLANS INDEX OF DRAWINGS

1. AIRPORT DATA SHEET
2. AIRPORT LAYOUT PLAN
3. NORTH TERMINAL AREA PLAN
4. MIDFIELD TERMINAL AREA PLAN
5. SOUTH TERMINAL AREA PLAN
6. PART 77 AIRSPACE PLAN
7. APPROACH ZONES PROFILES /  
RUNWAY END AREA PLANS
8. AIRPORT PROPERTY MAP
9. AIRPORT UTILITIES MAP

ADOT GRANT #N404

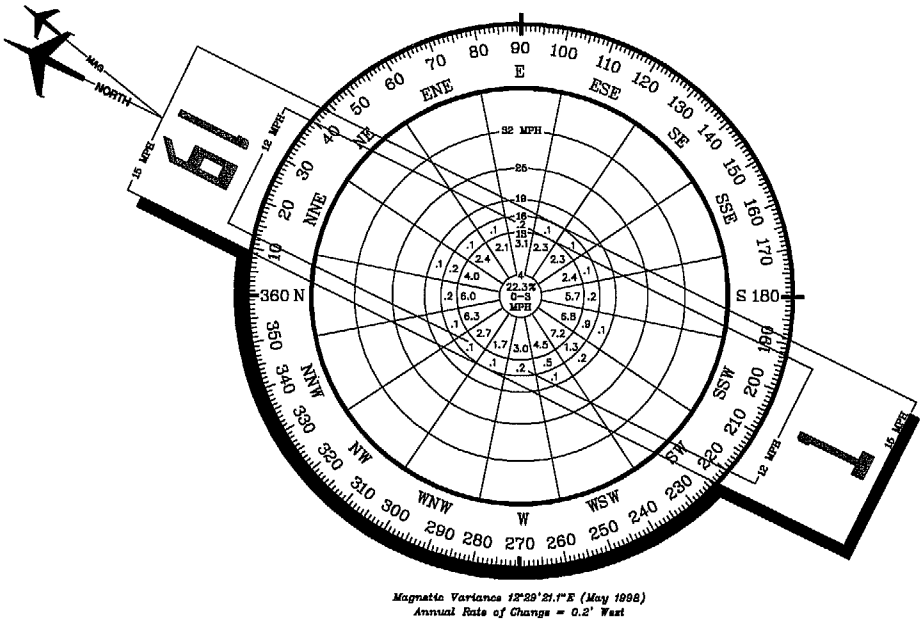


AIRPORT DATA			
GLENDALE MUNICIPAL AIRPORT (GEU)			
CITY: GLENDALE		COUNTY: MARICOPA, ARIZONA	
RANGE: R. 1 E.		TOWNSHIP: T. 2 N.	
		CIVIL TOWNSHIP: --	
		EXISTING	ULTIMATE
AIRPORT CATEGORY		GENERAL AVIATION	SAME
DESIGN AIRCRAFT		BEECH KING AIR	CANADAIR CL-600
AIRPORT REFERENCE CODE (ARC):		B-II	C-II
RUNWAY CATEGORY/DESIGN GROUP		B-II	C-II
AIRPORT ELEVATION (ABOVE MEAN SEA LEVEL)		1066'	1069'
MEAN MAXIMUM TEMPERATURE OF HOTTEST MONTH		104.5°F (July)	SAME
AIRPORT REFERENCE POINT		Latitude 33°31'38.146"N	33°31'37.255"N
(ARP) COORDINATES (NAD 83)		Longitude 112°17'42.563"W	112°17'43.087"W
AIRPORT and TERMINAL NAVIGATIONAL AIDS		ROTATING BEACON	SAME
		ATCT	SAME
		NDB	SAME
		VORTAC	SAME
		--	GPS
GPS APPROACH		NO	YES
RUNWAY END COORDINATES (NAD 83)		EXISTING	ULTIMATE
RUNWAY 1	Latitude	33°31'14.400"N	33°31'05.526"N
	Longitude	112°17'56.533"W	112°18'01.753"W
RUNWAY 1 (DISPLACED THRESHOLD)	Latitude	--	33°31'11.679"N
	Longitude	--	112°17'58.133"W
RUNWAY 19	Latitude	33°32'01.884"N	33°32'08.983"N
	Longitude	112°17'28.595"W	112°17'24.418"W
RUNWAY 19 (DISPLACED THRESHOLD)	Latitude	--	33°32'00.109"N
	Longitude	--	112°17'29.640"W

DEVIATIONS FROM FAA AIRPORT DESIGN STANDARDS				
DEVIATION DESCRIPTION	EFFECTED DESIGN STANDARD	STANDARD	EXISTING	PROPOSED DISPOSITION
Ult. Runway 19 - Runway Safety Area	AC - 150/6300-13	1000' Beyond Runway End	300'	Displace Threshold
Ult. Runway 19 - Object Free Area	AC - 150/6300-13	1000' Beyond Runway End	300'	Displace Threshold
Ult. Runway 19 - Obstacle Free Zone	AC - 150/6300-13	200' Beyond Runway End	120'	Displace Threshold
Ult. Runway 1 - Runway Safety Area	AC - 150/6300-13	1000' Beyond Runway End	0'	Displace Threshold
Ult. Runway 1 - Object Free Area	AC - 150/6300-13	1000' Beyond Runway End	0'	Displace Threshold
Ult. Runway 1-19 To Parallel Taxiway A Separation	AC - 150/6300-13	300'	240'	Request Modification to Design Standard

RUNWAY DATA	RUNWAY 1-19	
	EXISTING	ULTIMATE
RUNWAY CATEGORY	GENERAL AVIATION	SAME
AIRCRAFT DESIGN GROUP/APPROACH SPEED CATEGORY	B-II	C-II
RUNWAY AZIMUTH	26.23222	SAME
RUNWAY BEARING	N26°13'56"E	SAME
RUNWAY DIMENSIONS	5350' X 75'	7150' X 100'
MAXIMUM RUNWAY ELEVATION (above MSL)	1065.5'	1074.6' (Interpolated)
WIND COVERAGE (in %)	12 MPH 99.2%/15 MPH 99.8%	SAME
APPROACH VISIBILITY MINIMUMS	+1 MILE/+1 MILE	+1 MILE/+1 MILE
FAR PART 77 CATEGORY	VISUAL/VISUAL	NONPREC./NONPREC.
RUNWAY INSTRUMENTATION	VISUAL/VISUAL	NONPREC./NONPREC.
RUNWAY APPROACH SURFACES	20:1/20:1	34:1/34:1
RUNWAY THRESHOLD DISPLACEMENT	NONE	700'/1000'
RUNWAY STOPWAY	NONE	SAME
RUNWAY SAFETY AREA (RSA)	5950' X 150'	7450' X 500'
RSA DISTANCE BEYOND RUNWAY END	300'/300'	0'/300'
RUNWAY OBJECT FREE AREA (OFA)	6550' X 800'	7450' X 800'
RUNWAY OBSTACLE FREE ZONE (OFZ)	6750' X 250'	7470' X 400'
TAKEOFF RUN AVAILABLE (TORA)	5350'/5350'	7150'/7150'
TAKEOFF DISTANCE AVAILABLE (TODA)	5350'/5350'	7150'/7150'
ACCELERATE-STOP DISTANCE AVAILABLE (ASDA)	5350'/5350'	6150'/6450'
LANDING DISTANCE AVAILABLE (LDA)	5350'/5350'	5450'/6450'
RUNWAY PAVEMENT MATERIAL	ASPHALT	SAME
PAVEMENT SURFACE TREATMENT	NONE	SAME
PAVEMENT STRENGTH (in thousand lbs.) <sup>1</sup>	30(S), 37.5 (D)	75 (D)
RUNWAY EFFECTIVE GRADIENT (in %)	0.439	0.439
RUNWAY LIGHTING	MIRL	SAME
RUNWAY MARKING	VISUAL/VISUAL	NONPREC./NONPREC.
RUNWAY APPROACH LIGHTING	NONE	SAME
TAXIWAY PAVEMENT MATERIAL	ASPHALT	SAME
TAXIWAY LIGHTING	MITL	MITL
TAXIWAY MARKING	CENTERLINE, EDGE	SAME
NAVIGATIONAL AIDS	NDB	SAME
	VORTAC	SAME
	--	GPS
VISUAL AIDS	PAPI-2 (Both)	PAPI-4 (Both)
	REIL (Both)	SAME

<sup>1</sup> Pavement strengths are expressed in Single(S) and Dual(D) wheel loading capacities.

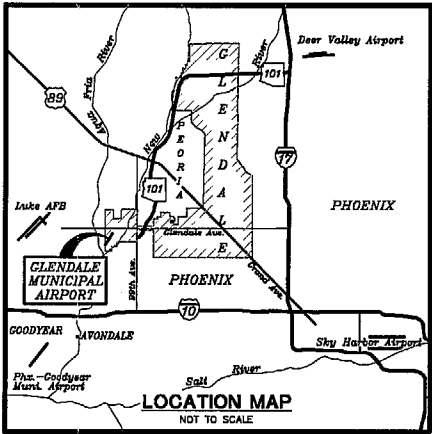
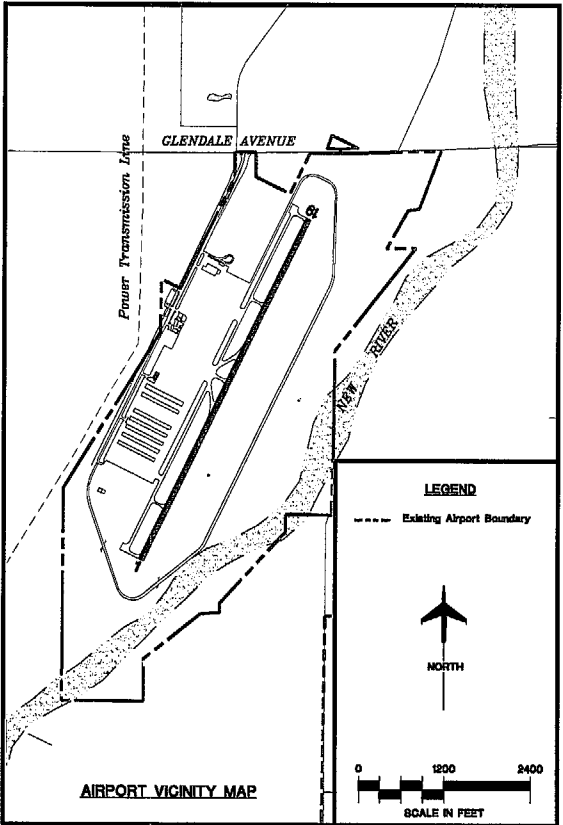


WIND DATA		
	12 MPH (10.5 Knots)	15 MPH (13 Knots)
Runway 1-19	99.2%	99.8%

SOURCE:  
United States Air Force  
Global Technology Branch  
USAFETAC  
Air Weather Service/MAC  
Luke AFB  
Maricopa County, Arizona  
87,641 Observations  
1976-1988

#### WINDROSE

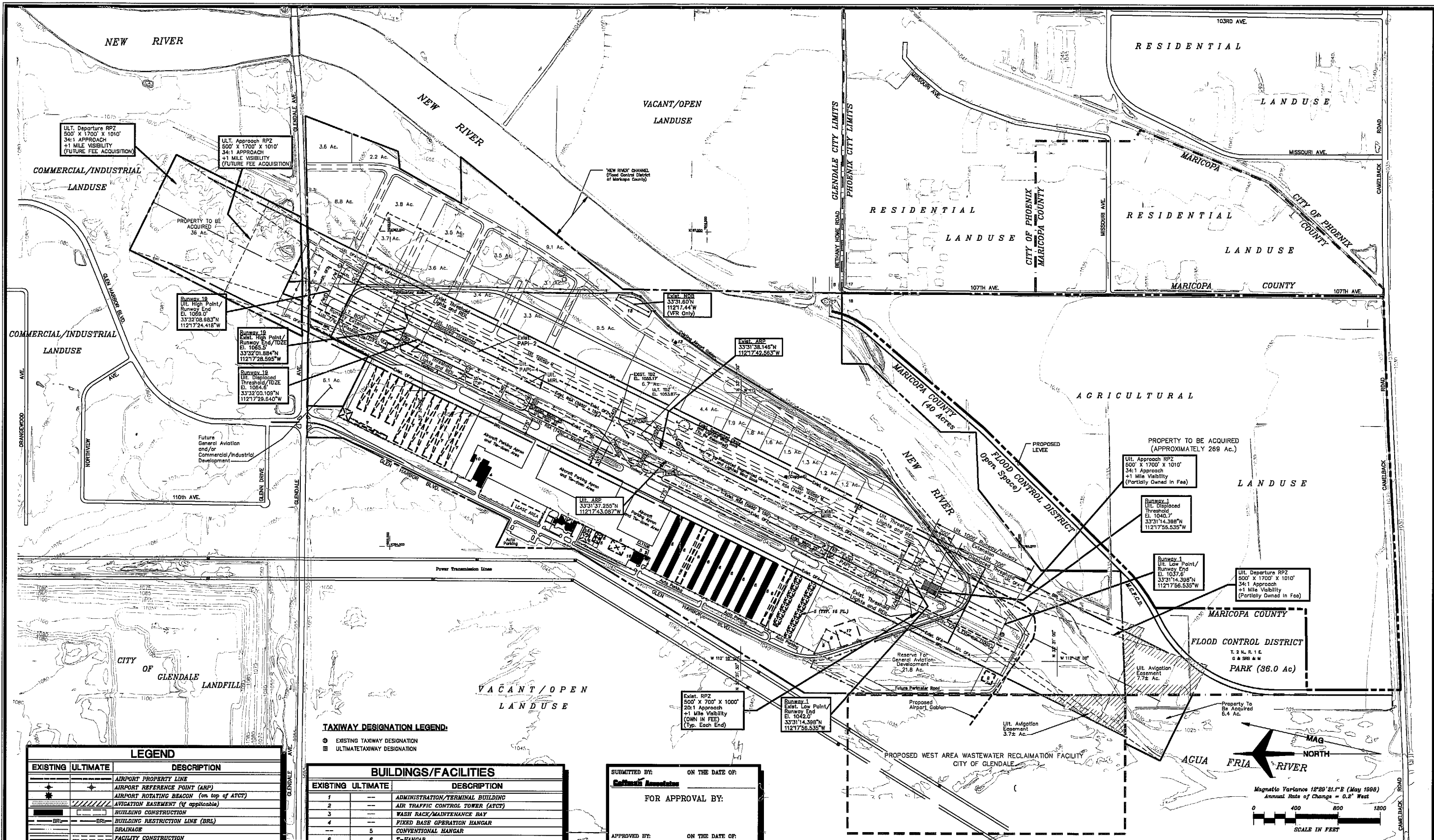
NOTE: Wind data observations were recorded at Luke AFB (5 miles west) and were adapted to Glendale Municipal Airport's Runway 1-19 orientation.



REVISIONS			
No.	REVISIONS	DATE	BY
1	ALP REVALIDATED BY THE FAA	5/28/96	--
2	PREVIOUS ALP APPROVED AND SIGNED BY THE FAA	2/3/95	--

GLENDALE MUNICIPAL AIRPORT	
AIRPORT DATA SHEET	
GLENDALE, ARIZONA	
PLANNED BY: Chris Ruger	DETAILED BY: W.B. Holland
APPROVED BY: James M. Harris, P.E.	May 4, 1998
SHEET 1 OF 9	

**Coffman Associates**  
Airport Consultants



LEGEND		
EXISTING	ULTIMATE	DESCRIPTION
[Symbol]	[Symbol]	AIRPORT PROPERTY LINE
[Symbol]	[Symbol]	AIRPORT REFERENCE POINT (ARP)
[Symbol]	[Symbol]	AIRPORT ROTATING BEACON (on top of ATCT)
[Symbol]	[Symbol]	AVIGATION EASEMENT (if applicable)
[Symbol]	[Symbol]	BUILDING CONSTRUCTION
[Symbol]	[Symbol]	BUILDING RESTRICTION LINE (BRL)
[Symbol]	[Symbol]	DRAINAGE
[Symbol]	[Symbol]	FACILITY CONSTRUCTION
[Symbol]	[Symbol]	FENCING
[Symbol]	[Symbol]	NAVIGATIONAL AID INSTALLATION
[Symbol]	[Symbol]	RUNWAY END IDENTIFICATION LIGHTS (REIL)
[Symbol]	[Symbol]	RUNWAY THRESHOLD LIGHTS
[Symbol]	[Symbol]	RUNWAY EDGE LIGHTS (MIRL)
[Symbol]	[Symbol]	SECTION CORNER
[Symbol]	[Symbol]	SEGMENTED CIRCLE/WIND INDICATOR
[Symbol]	[Symbol]	TOPOGRAPHIC CONTOURS
[Symbol]	[Symbol]	WIND INDICATOR (Lighted)
[Symbol]	[Symbol]	ARIZONA STATE GRID COORDINATES (CENTRAL ZONE)
[Symbol]	[Symbol]	GEOGRAPHIC COORDINATES

TAXIWAY DESIGNATION LEGEND:

- EXISTING TAXIWAY DESIGNATION
- ULTIMATE TAXIWAY DESIGNATION

BUILDINGS/FACILITIES		
EXISTING	ULTIMATE	DESCRIPTION
1	---	ADMINISTRATION/TERMINAL BUILDING
2	---	AIR TRAFFIC CONTROL TOWER (ATCT)
3	---	WASH RACK/MAINTENANCE BAY
4	---	FIXED BASE OPERATION HANGAR
---	5	CONVENTIONAL HANGAR
6	6	T-HANGAR
---	7	EXECUTIVE HANGAR
---	8	ABOVEGROUND FUEL STORAGE FACILITY
9	---	UNDERGROUND FUEL STORAGE FACILITY
10	---	FUEL TRUCK PARKING FACILITY
11	---	SEPTIC TANK (Capped)
12	---	LIFT STATION
13	---	NONDIRECTIONAL RADIO BEACON
14	---	THIS NUMBER NOT USED
---	16	AIR EVAC HELIPAD
16	---	MAINTENANCE GARAGE
---	17	APS SOLAR POWER PLANT SITE

SUBMITTED BY: Coltman Associates ON THE DATE OF: \_\_\_\_\_

FOR APPROVAL BY: \_\_\_\_\_

APPROVED BY: \_\_\_\_\_ ON THE DATE OF: \_\_\_\_\_

JAMES J. MacGUE, A.A.E.  
AIRPORT MANAGER

- GENERAL NOTES:
- Depiction of features and objects, including related elevations within the runway protection zones are shown on the RUNWAY PROTECTION ZONES PLAN, sheet 7 of 8, of these plans.
  - Details concerning development and scheduling of airport improvements are illustrated on the TERMINAL AREA PLANS, sheets 3, 4 & 5 of 8, of these plans.
  - All latitude and longitude coordinates were calculated from the U.S.G.S. map.

FAA APPROVAL STAMP

\_\_\_\_\_

REVISIONS			
No.	REVISIONS	DATE	BY
1	ALP REVALIDATED BY THE FAA	5/28/96	---
2	PREVIOUS ALP APPROVED AND SIGNED BY THE FAA	2/3/95	---

GLENDALE MUNICIPAL AIRPORT  
AIRPORT LAYOUT PLAN  
GLENDALE, ARIZONA

PLANNED BY: Chris Hagman  
DETAILED BY: W.B. Holland  
APPROVED BY: James M. Harris, P.E.  
May 4, 1996 SHEET 2 OF 9

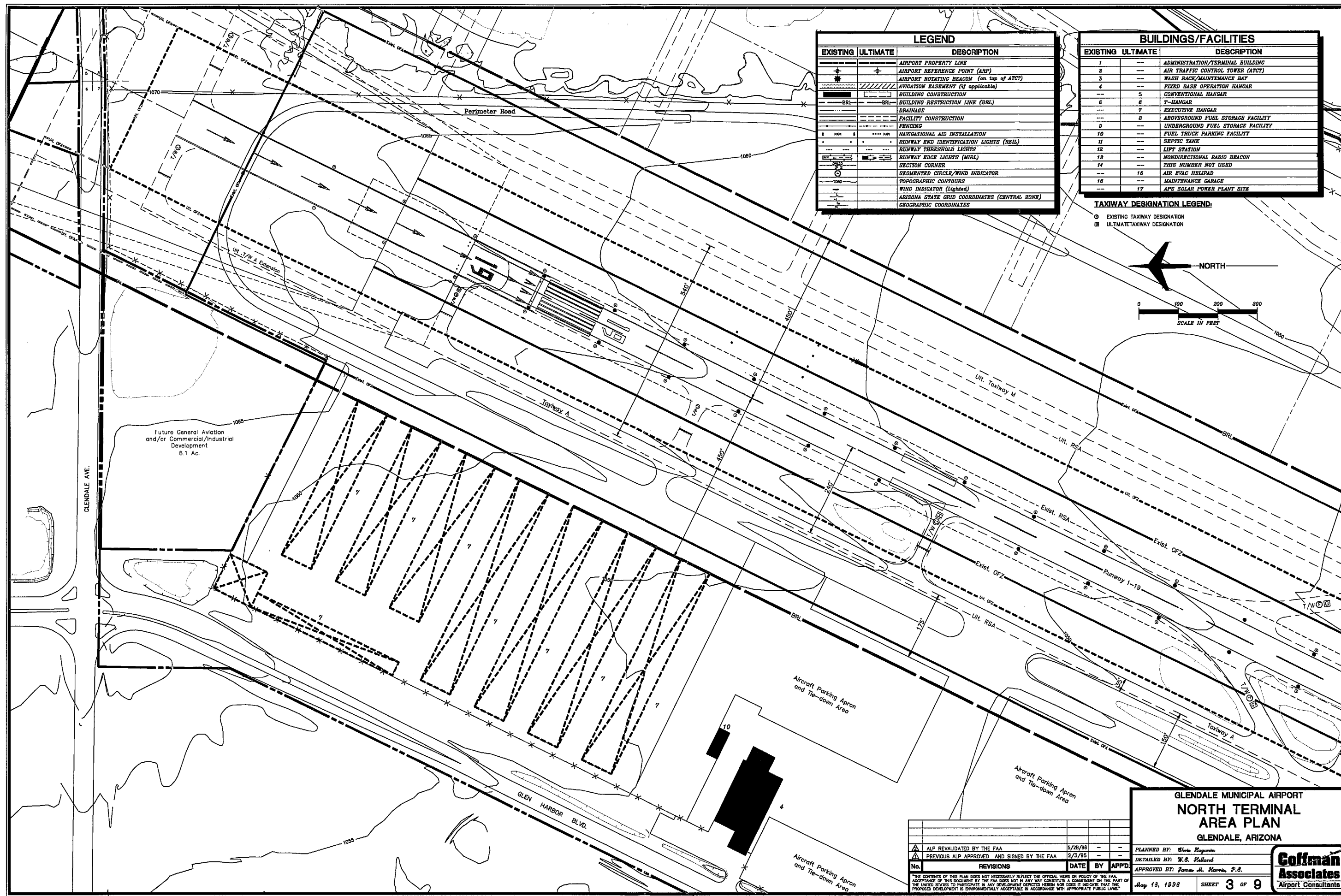
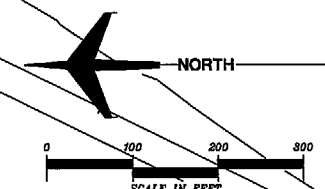
**Coltman Associates**  
Airport Consultants

LEGEND		
EXISTING	ULTIMATE	DESCRIPTION
		AIRPORT PROPERTY LINE
		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON (on top of ATCT)
		AVIGATION EASEMENT (if applicable)
		BUILDING CONSTRUCTION
		BUILDING RESTRICTION LINE (BRL)
		DRAINAGE
		FACILITY CONSTRUCTION
		FENCING
		NAVIGATIONAL AID INSTALLATION
		RUNWAY END IDENTIFICATION LIGHTS (REIL)
		RUNWAY THRESHOLD LIGHTS
		RUNWAY EDGE LIGHTS (MRL)
		SECTION CORNER
		SEGMENTED CIRCLE/WIND INDICATOR
		TOPOGRAPHIC CONTOURS
		WIND INDICATOR (Lighthouse)
		ARIZONA STATE GRID COORDINATES (CENTRAL ZONE)
		GEOGRAPHIC COORDINATES

BUILDINGS/FACILITIES		
EXISTING	ULTIMATE	DESCRIPTION
1	---	ADMINISTRATION/TERMINAL BUILDING
2	---	AIR TRAFFIC CONTROL TOWER (ATCT)
3	---	WASH RACK/MAINTENANCE BAY
4	---	FIXED BASE OPERATION HANGAR
5	---	CONVENTIONAL HANGAR
6	---	T-HANGAR
7	---	EXECUTIVE HANGAR
8	---	ABOVEGROUND FUEL STORAGE FACILITY
9	---	UNDERGROUND FUEL STORAGE FACILITY
10	---	FUEL TRUCK PARKING FACILITY
11	---	SEPTIC TANK
12	---	LIFT STATION
13	---	NONDIRECTIONAL RADIO BEACON
14	---	THIS NUMBER NOT USED
15	---	AIR EVAC HELIPAD
16	---	MAINTENANCE GARAGE
17	---	APS SOLAR POWER PLANT SITE

#### TAXIWAY DESIGNATION LEGEND:

- EXISTING TAXIWAY DESIGNATION  
 ULTIMATE TAXIWAY DESIGNATION



#### GLENDAL MUNICIPAL AIRPORT NORTH TERMINAL AREA PLAN GLENDAL, ARIZONA

ALP REVALIDATED BY THE FAA	5/28/98	---	---
PREVIOUS ALP APPROVED AND SIGNED BY THE FAA	2/3/95	---	---
REVISIONS		DATE	BY
No.			

PLANNED BY: *W. B. Holland*  
 DETAILED BY: *W. B. Holland*  
 APPROVED BY: *James M. Harris, P.E.*  
 May 18, 1998

**Coffman Associates**  
 Airport Consultants  
 SHEET 3 OF 9

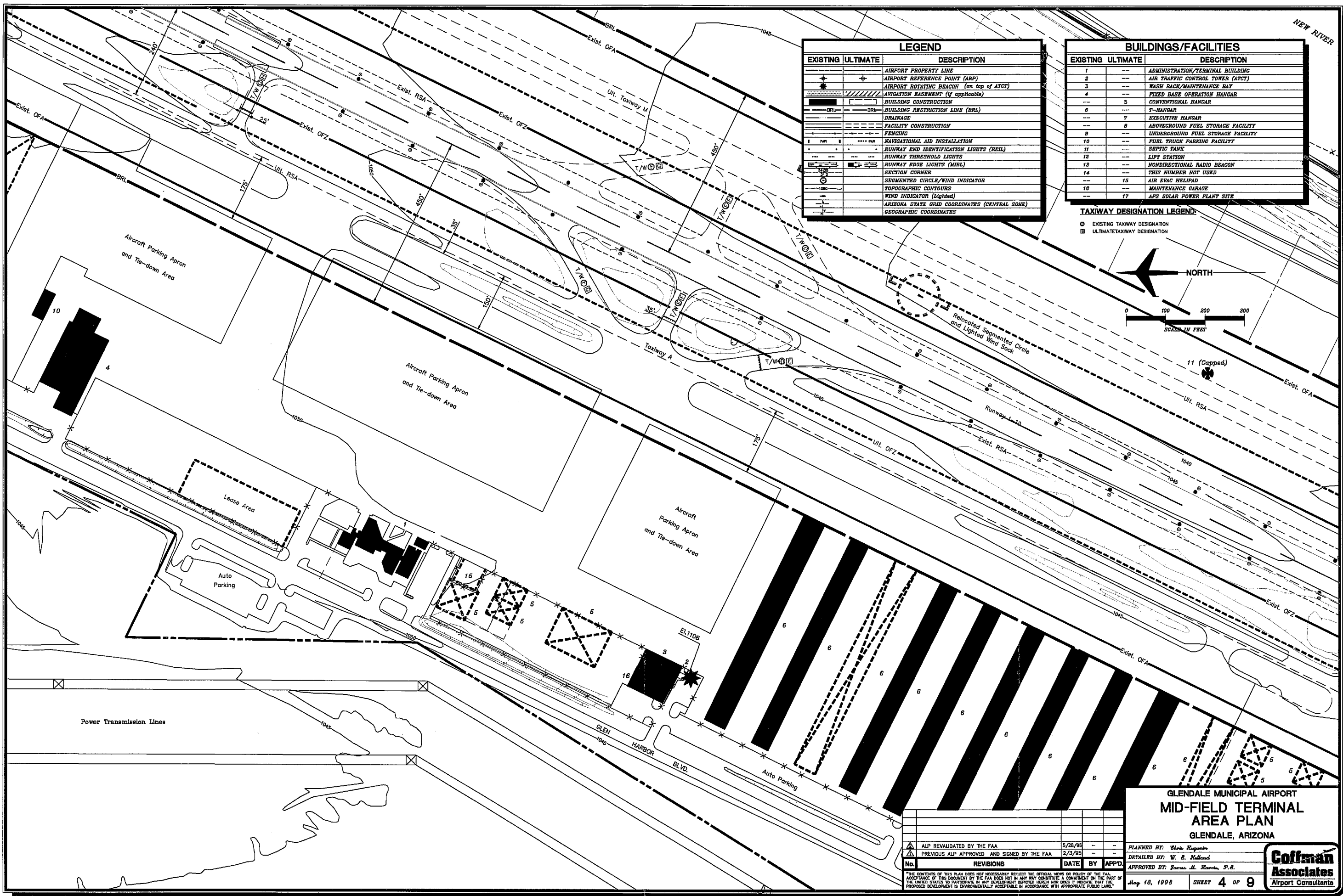
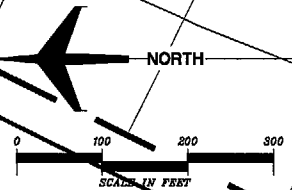


LEGEND		
EXISTING	ULTIMATE	DESCRIPTION
		AIRPORT PROPERTY LINE
		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON (on top of ATCT)
		AVIATION EASEMENT (if applicable)
		BUILDING CONSTRUCTION
		BUILDING RESTRICTION LINE (BRL)
		DRAINAGE
		FACILITY CONSTRUCTION
		FENCING
		NAVIGATIONAL AID INSTALLATION
		RUNWAY END IDENTIFICATION LIGHTS (REIL)
		RUNWAY THRESHOLD LIGHTS
		RUNWAY EDGE LIGHTS (MRL)
		SECTION CORNER
		SEGMENTED CIRCLE/WIND INDICATOR
		TOPOGRAPHIC CONTOURS
		WIND INDICATOR (lighted)
		ARIZONA STATE GRID COORDINATES (CENTRAL ZONE)
		GEOGRAPHIC COORDINATES

BUILDINGS/FACILITIES		
EXISTING	ULTIMATE	DESCRIPTION
1	---	ADMINISTRATION/TERMINAL BUILDING
2	---	AIR TRAFFIC CONTROL TOWER (ATCT)
3	---	WASH RACK/MAINTENANCE BAY
4	---	FIXED BASE OPERATION HANGAR
---	5	CONVENTIONAL HANGAR
6	---	T-HANGAR
---	7	EXECUTIVE HANGAR
---	8	ABOVEGROUND FUEL STORAGE FACILITY
9	---	UNDERGROUND FUEL STORAGE FACILITY
10	---	FUEL TRUCK PARKING FACILITY
11	---	SEPTIC TANK
12	---	LIFT STATION
13	---	NONDIRECTIONAL RADIO BEACON
14	---	THIS NUMBER NOT USED
---	15	AIR BRAC HELIPAD
16	---	MAINTENANCE GARAGE
---	17	APS SOLAR POWER PLANT SITE

**TAXIWAY DESIGNATION LEGEND**

- ⊙ EXISTING TAXIWAY DESIGNATION
- ⊞ ULTIMATE TAXIWAY DESIGNATION

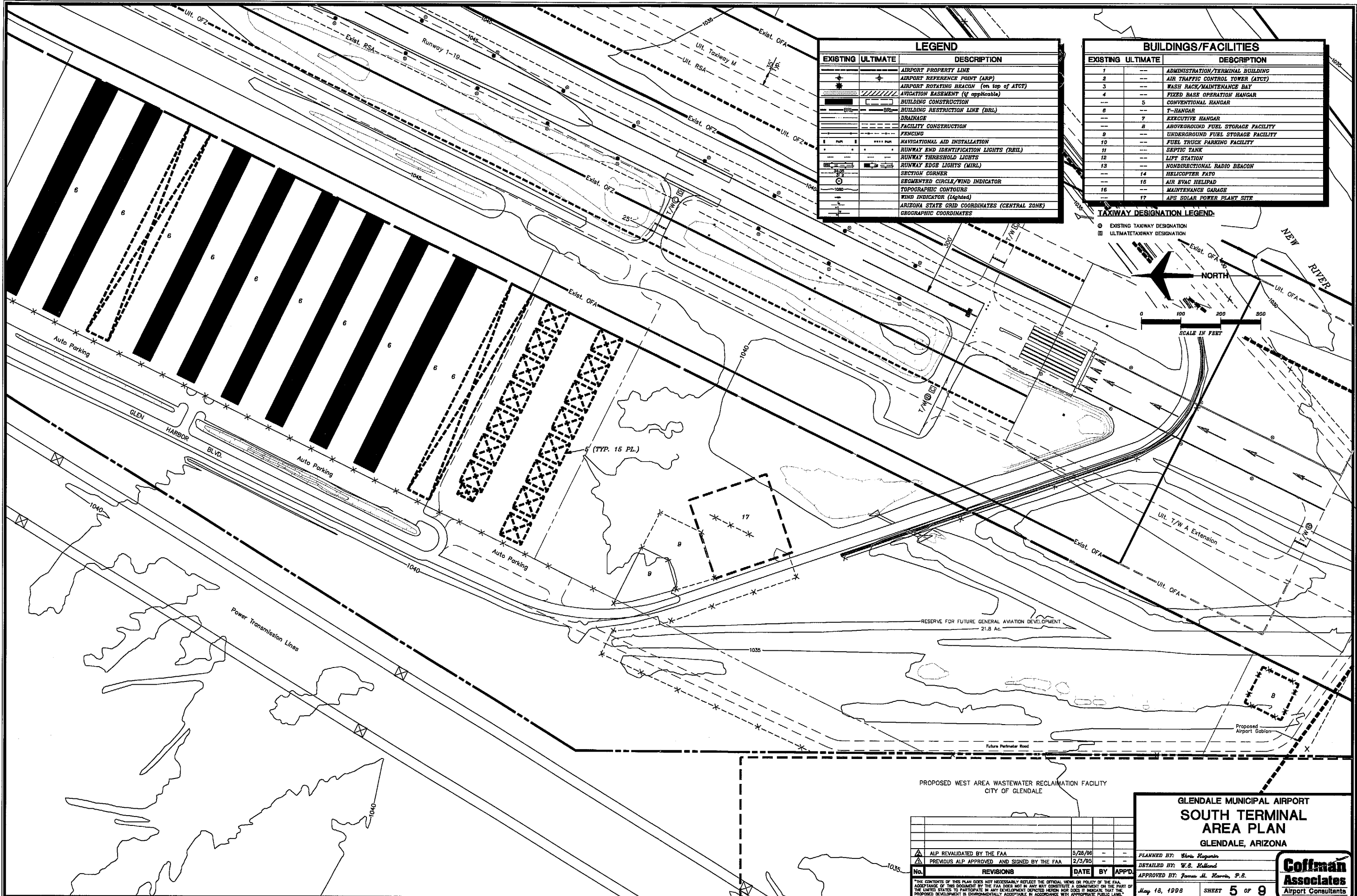


**GLENDALE MUNICIPAL AIRPORT  
MID-FIELD TERMINAL  
AREA PLAN  
GLENDALE, ARIZONA**

ALP REVALUATED BY THE FAA	5/28/96	---	---
PREVIOUS ALP APPROVED AND SIGNED BY THE FAA	2/3/95	---	---
NO.	REVISIONS	DATE	BY

PLANNED BY: *Walter Ruggen*  
 DETAILED BY: *W. S. Holland*  
 APPROVED BY: *James M. Harris, P.E.*  
 May 18, 1998





LEGEND		
EXISTING	ULTIMATE	DESCRIPTION
[Symbol]	[Symbol]	AIRPORT PROPERTY LINE
[Symbol]	[Symbol]	AIRPORT REFERENCE POINT (ARP)
[Symbol]	[Symbol]	AIRPORT ROTATING BEACON (on top of ATCT)
[Symbol]	[Symbol]	AVIGATION EASEMENT (if applicable)
[Symbol]	[Symbol]	BUILDING CONSTRUCTION
[Symbol]	[Symbol]	BUILDING RESTRICTION LINE (BRL)
[Symbol]	[Symbol]	DRAINAGE
[Symbol]	[Symbol]	FACILITY CONSTRUCTION
[Symbol]	[Symbol]	FENCING
[Symbol]	[Symbol]	NAVIGATIONAL AID INSTALLATION
[Symbol]	[Symbol]	RUNWAY END IDENTIFICATION LIGHTS (REIL)
[Symbol]	[Symbol]	RUNWAY THRESHOLD LIGHTS
[Symbol]	[Symbol]	RUNWAY EDGE LIGHTS (MRL)
[Symbol]	[Symbol]	SECTION CORNER
[Symbol]	[Symbol]	SEGMENTED CIRCLE/WIND INDICATOR
[Symbol]	[Symbol]	TOPOGRAPHIC CONTOURS
[Symbol]	[Symbol]	WIND INDICATOR (lighted)
[Symbol]	[Symbol]	ARIZONA STATE GRID COORDINATES (CENTRAL ZONE)
[Symbol]	[Symbol]	GEOGRAPHIC COORDINATES

BUILDINGS/FACILITIES		
EXISTING	ULTIMATE	DESCRIPTION
1	---	ADMINISTRATION/TERMINAL BUILDING
2	---	AIR TRAFFIC CONTROL TOWER (ATCT)
3	---	WASH RACK/MAINTENANCE BAY
4	---	FIXED BASE OPERATION HANGAR
5	---	CONVENTIONAL HANGAR
6	---	T-HANGAR
7	---	EXECUTIVE HANGAR
8	---	ABOVEGROUND FUEL STORAGE FACILITY
9	---	UNDERGROUND FUEL STORAGE FACILITY
10	---	FUEL TRUCK PARKING FACILITY
11	---	SEPTIC TANK
12	---	LIFT STATION
13	---	NONDIRECTIONAL RADIO BEACON
14	---	HELICOPTER PAVO
15	---	AIR EVAC HELIPAD
16	---	MAINTENANCE GARAGE
17	---	APS SOLAR POWER PLANT SITE

TAXIWAY DESIGNATION LEGEND:

- EXISTING TAXIWAY DESIGNATION
- ULTIMATE TAXIWAY DESIGNATION

PROPOSED WEST AREA WASTEWATER RECLAMATION FACILITY  
CITY OF GLENDALE

REVISIONS			
No.	REVISIONS	DATE	BY
1	ALP REVALIDATED BY THE FAA	5/28/86	---
2	PREVIOUS ALP APPROVED AND SIGNED BY THE FAA	2/3/85	---

**GLENDALE MUNICIPAL AIRPORT  
SOUTH TERMINAL  
AREA PLAN**  
GLENDALE, ARIZONA

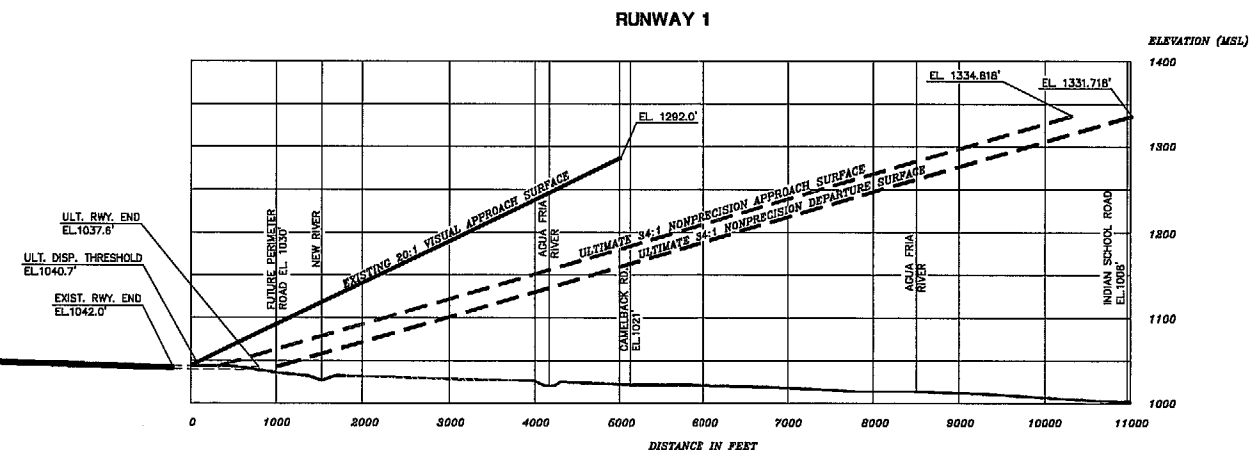
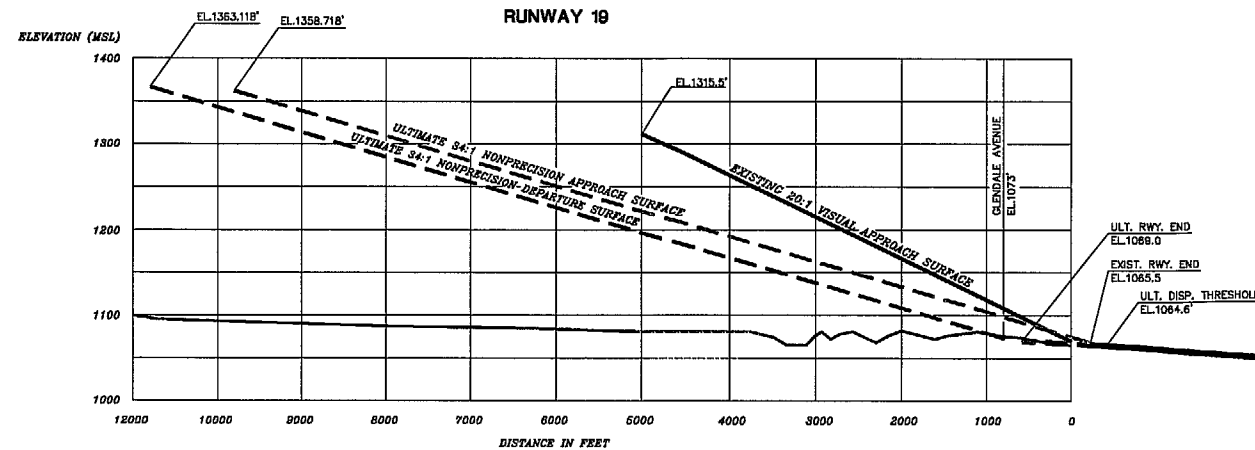
PLANNED BY: Chris Higgins  
DETAILED BY: W.G. Holland  
APPROVED BY: James M. Harris, P.E.

May 16, 1988

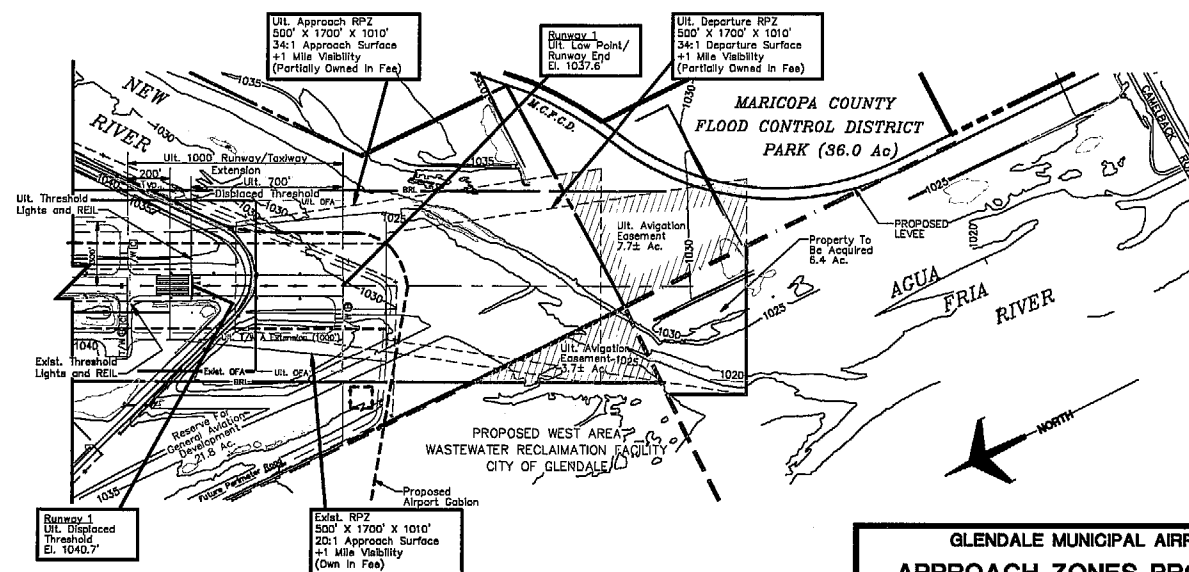
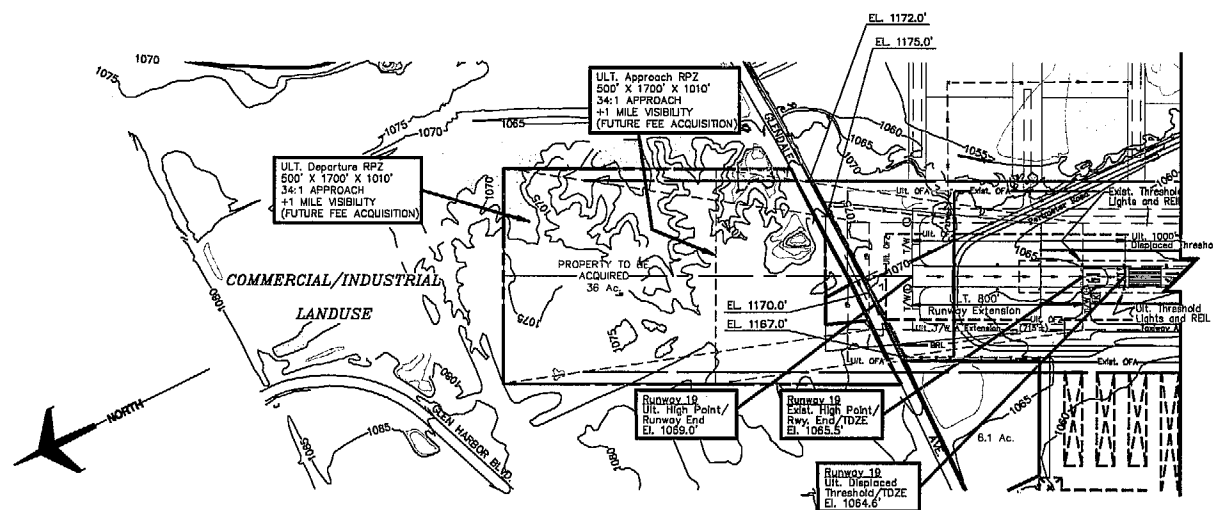
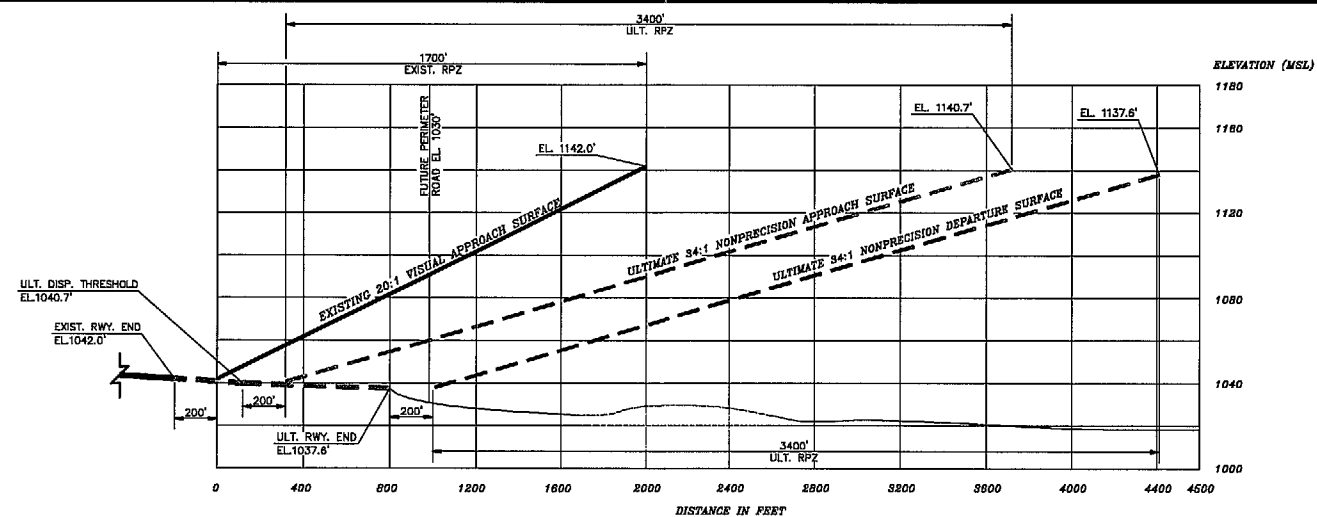
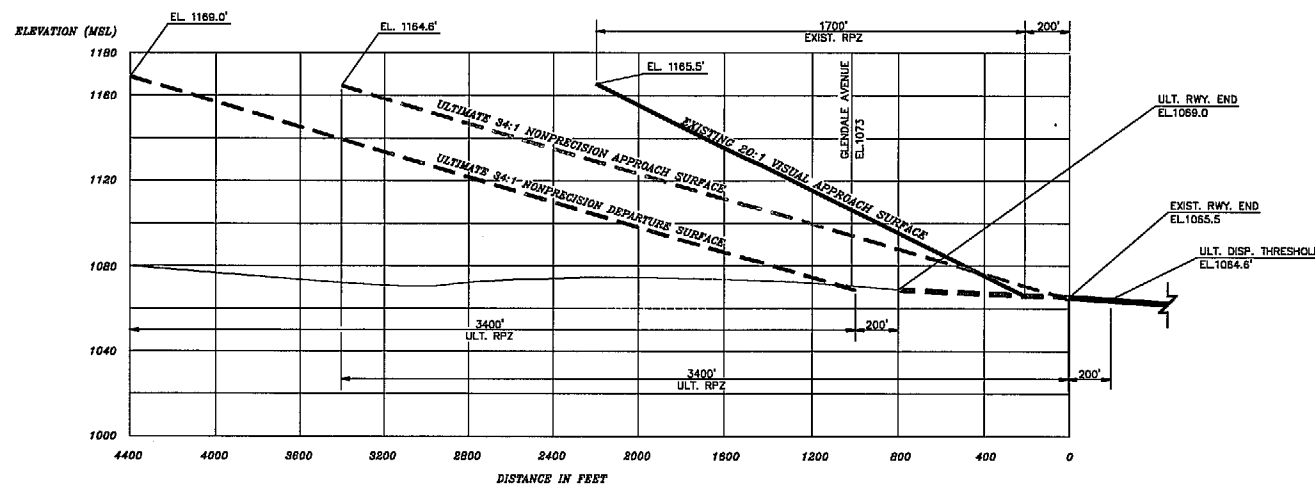
**Coffman  
Associates**  
Airport Consultants







RUNWAY 1-19 APPROACH ZONES PROFILES



RUNWAY 1-19 RUNWAY END AREA PLANS AND PROFILES



GENERAL NOTES:

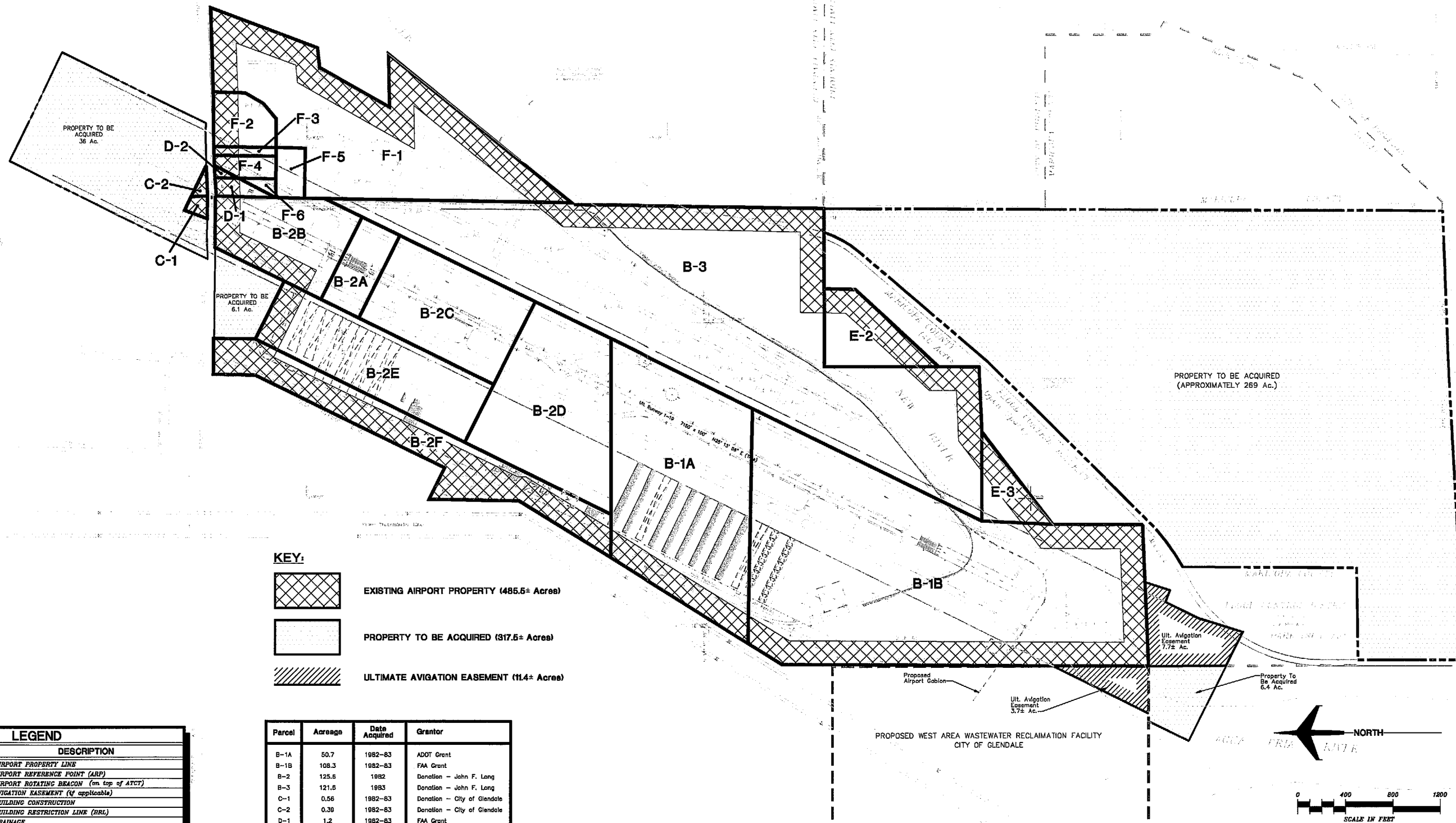
1. No obstructions noted within any PART 77 Airspace Surface.
2. Depiction of features and objects within the primary, transitional, and horizontal Part 77 surfaces, are illustrated on the PART 77 AIRSPACE PLAN, sheet 6 of 9, of these plans.

REVISIONS			
No.	REVISIONS	DATE	BY
1	ALP REVALUATED BY THE FAA	5/28/96	
2	PREVIOUS ALP APPROVED AND SIGNED BY THE FAA	2/3/95	

GLENDAL MUNICIPAL AIRPORT  
APPROACH ZONES PROFILES/  
RUNWAY END AREA PLANS  
GLENDAL, ARIZONA

PLANNED BY: *Chris Kugan*  
DETAILED BY: *W.B. Holland*  
APPROVED BY: *James M. Harris, P.E.*  
May 18, 1998

**Coffman Associates**  
Airport Consultants



LEGEND		
EXISTING	ULTIMATE	DESCRIPTION
		AIRPORT PROPERTY LINE
		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON (on top of ATCT)
		AVIGATION EASEMENT (if applicable)
		BUILDING CONSTRUCTION
		BUILDING RESTRICTION LINE (BRL)
		DRAINAGE
		FACILITY CONSTRUCTION
		FENCING
		NAVIGATIONAL AID INSTALLATION
		RUNWAY END IDENTIFICATION LIGHTS (REIL)
		RUNWAY THRESHOLD LIGHTS
		RUNWAY EDGE LIGHTS (MRL)
		SECTION CORNER
		SEGMENTED CIRCLE/WIND INDICATOR
		TOPOGRAPHIC CONTOURS
		WIND INDICATOR (Lighted)
		ARIZONA STATE GRID COORDINATES (CENTRAL ZONE)
		GEOGRAPHIC COORDINATES

Parcel	Acreage	Date Acquired	Grantor
B-1A	50.7	1982-83	ADOT Grant
B-1B	108.3	1982-83	FAA Grant
B-2	125.6	1982	Donation - John F. Long
B-3	121.8	1983	Donation - John F. Long
C-1	0.56	1982-83	Donation - City of Glendale
C-2	0.38	1982-83	Donation - City of Glendale
D-1	1.2	1982-83	FAA Grant
D-2	0.11	1982-83	FAA Grant
E-2	13.8	1982-83	FAA Grant
E-3	4.9	1982-83	FAA Grant
F-1	51.1	1995	Glendale Airport Partners
F-2	4.8	1996	Yamamoto
F-3	0.6**	Unknown	Unknown
F-4	2.5**	Unknown	Unknown
F-5	2.3**	Unknown	Unknown
F-6	0.5**	Unknown	Unknown

\*\* - These acreages are calculated and are subject to field and record verification. Information concerning Acreage, Acquisition Date and Grantor were unavailable at the time of this printing.

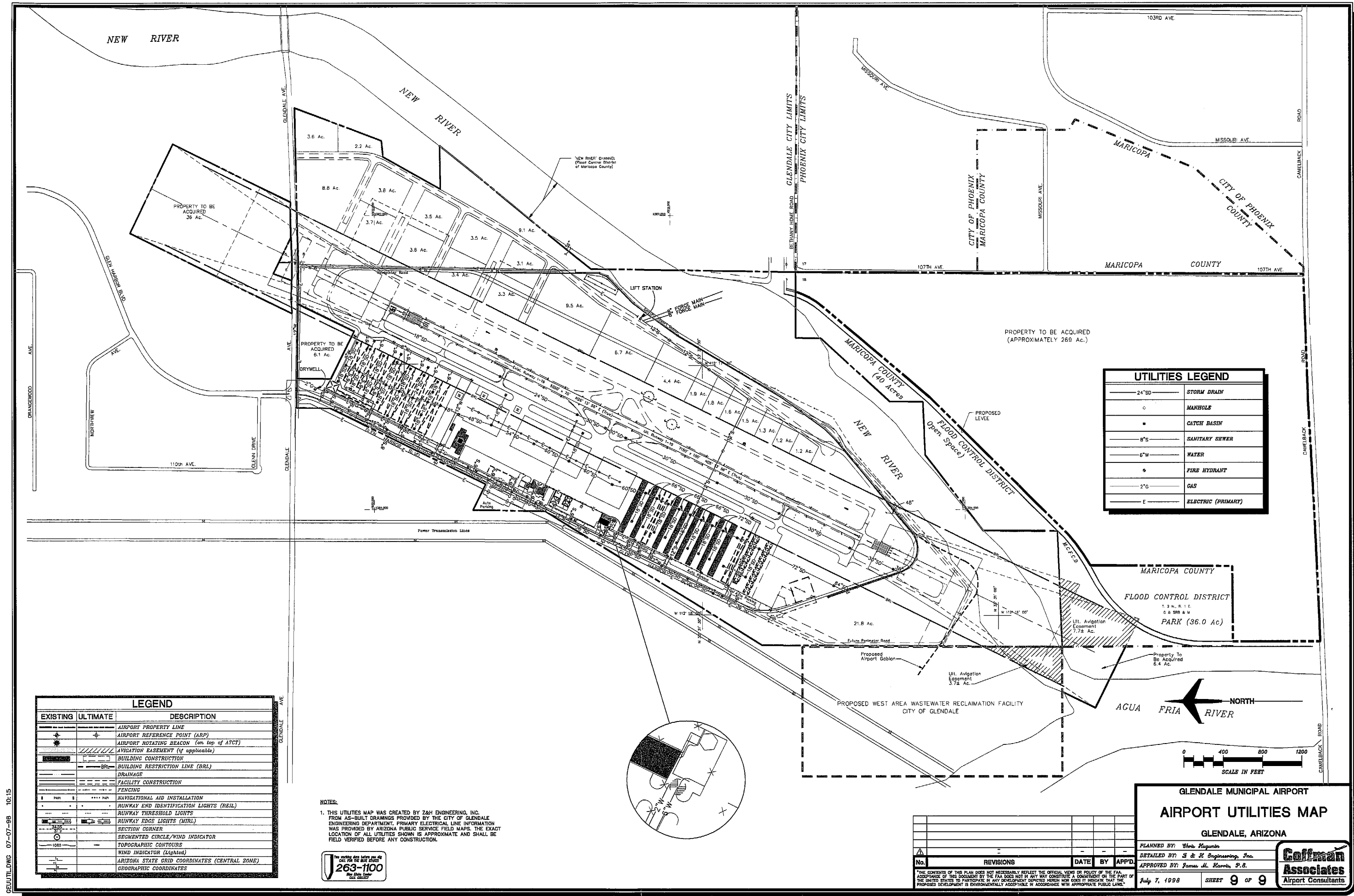
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GLENDALE MUNICIPAL AIRPORT  
 AIRPORT PROPERTY MAP  
 GLENDALE, ARIZONA

PLANNED BY: Chris Kugler  
 DETAILED BY: W.B. Holland  
 APPROVED BY: James M. Harris, P.E.  
 May 18, 1998

SHEET 8 OF 9

**Coffman Associates**  
 Airport Consultants



UTILITIES LEGEND	
24" SD	STORM DRAIN
Ø	MANHOLE
■	CATCH BASIN
8" S	SANITARY SEWER
6" W	WATER
5"	FIRE HYDRANT
2" G	GAS
E	ELECTRIC (PRIMARY)

LEGEND		
EXISTING	ULTIMATE	DESCRIPTION
—	—	AIRPORT PROPERTY LINE
+	+	AIRPORT REFERENCE POINT (ARP)
⊙	⊙	AIRPORT ROTATING BEACON (on top of ATCT)
—	—	AVIGATION EASEMENT (if applicable)
—	—	BUILDING CONSTRUCTION
—	—	BUILDING RESTRICTION LINE (BRL)
—	—	DRAINAGE
—	—	FACILITY CONSTRUCTION
—	—	FENCING
—	—	NAVIGATIONAL AID INSTALLATION
—	—	RUNWAY END IDENTIFICATION LIGHTS (REIL)
—	—	RUNWAY THRESHOLD LIGHTS
—	—	RUNWAY EDGE LIGHTS (MRL)
—	—	SECTION CORNER
—	—	SEGMENTED CIRCLE/WIND INDICATOR
—	—	TOPOGRAPHIC CONTOURS
—	—	WIND INDICATOR (Lignid)
—	—	ARIZONA STATE GRID COORDINATES (CENTRAL ZONE)
—	—	GEOGRAPHIC COORDINATES

NOTES:  
1. THIS UTILITIES MAP WAS CREATED BY Z&H ENGINEERING, INC. FROM AS-BUILT DRAWINGS PROVIDED BY THE CITY OF GLENDALE. ENGINEERING DEPARTMENT. PRIMARY ELECTRICAL LINE INFORMATION WAS PROVIDED BY ARIZONA PUBLIC SERVICE FIELD MAPS. THE EXACT LOCATION OF ALL UTILITIES SHOWN IS APPROXIMATE AND SHALL BE FIELD VERIFIED BEFORE ANY CONSTRUCTION.



GLENNDALE MUNICIPAL AIRPORT  
AIRPORT UTILITIES MAP  
GLENNDALE, ARIZONA

PLANNED BY: *Wm. Hagan*  
DETAILED BY: *S & H Engineering, Inc.*  
APPROVED BY: *James M. Harris, P.E.*  
July 7, 1998

**Coffman Associates**  
Airport Consultants

REVISIONS  
No. DATE BY APP'D

SHEET 9 OF 9

SEUTL.DWG 07-07-98 10:15